

JC02 Rec'd PCT/PTO 2 8 MAR 2002

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

LANGER=1

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/089253

INTERNATIONAL APPLICATION NO.

PCT/DE00/03419

INTERNATIONAL FILING DATE

28 September 2000

PRIORITY CLAIMED

28 September 1999

TITLE OF INVENTION

METHOD FOR CONTROLLING A MACHINE DISPENSING GOODS AND CHARGING...

APPLICANT(S) FOR DO/EO/US

Michael LANGER et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ The US has been elected in a Demand by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is attached hereto (required only if not transmitted by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Items 11. to 16. below concern document(s) or information included:**

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
  - ☒ Courtesy copy of the International Application as filed (In German).
  - ☒ Courtesy copy of the first page of the International Publication (WO 01/24120).
  - ☒ Courtesy copy of the International Preliminary Examination Report with annexes containing pages 1 and 1A to be substituted for original specification page 1 and claims 1-9 to be substituted for original claims 1-4 for examination in this case.
  - ☒ Formal drawings, 1 sheets, Figures 1-1.
  - ☒ Courtesy Copy of the International Search Report.
  - ☒ Application Data Sheet
- ☒ The application is (or will be) assigned to: De TeMobil Deutsche Telekom MobilNet GmbH, whose address is Landgrabenweg 151, D-53227 Bonn, Germany.

|   |                               |                       |
|---|-------------------------------|-----------------------|
| U.S. APPLICATION NO. (If known, see 37 CFR 1.5) | International Application No. | Attorney's Docket No. |
| 10/089253                                       | PCT/DE00/03419                | LANGER=1              |

7. [xx] The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a)(1) –(5):**

Neither international preliminary examination fee (37 CFR 1.482)  
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO  
and International Search Report not prepared by the EPO or JPO.....\$1040.00

International preliminary examination fee (37 CFR 1.482) not paid to  
USPTO but International Search Report prepared by the EPO or JPO.....\$890.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but  
international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$740.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)  
but all claims did not satisfy provisions of PCT Article 33(1)-(4).....\$710.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)  
and all claims satisfied provisions of PCT Article 33(1)-(4).....\$100.00

**CALCULATIONS PTO USE ONLY**

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

\$ 890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than [ ] 20 [X] 30  
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 130.00

| Claims as Originally Presented            | Number Filed | Number Extra | Rate      |
|---|--------------|--------------|-----------|
| Total Claims                              | - 20         |              | X \$18.00 |
| Independent Claims                        | - 3          |              | X \$84.00 |
| Multiple Dependent Claims (if applicable) |              |              | +\$280.00 |

\$1,020.00

**TOTAL OF ABOVE CALCULATIONS =**

| Claims After Post Filing Prel. Amend | Number Filed | Number Extra | Rate      |
|--------------------------------------|--------------|--------------|-----------|
| Total Claims                         | - 20         |              | X \$18.00 |
| Independent Claims                   | - 3          |              | X \$84.00 |

**TOTAL OF ABOVE CALCULATIONS =**

\$1,020.00

Reduction of ½ for filing by small entity, if applicable. Applicant claims small entity  
status. See 37 CFR 1.27.

\$

**SUBTOTAL =**

\$1,020.00

Processing fee of \$130.00 for furnishing the English translation later than [ ] 20 [ ] 30  
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

**TOTAL NATIONAL FEE =**

\$1,020.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$

**TOTAL FEES ENCLOSED =**

\$1,020.00

Amount to be:  
refunded  
charged

\$  
\$  
\$

- a. [ ] A check in the amount of \$\_\_\_\_\_ to cover the above fees is enclosed.  
b. [X] Credit Card Payment Form (PTO-2038), authorizing payment in the amount of \$ 1,020.00, is attached.  
c. [ ] Please charge my Deposit Account No. 02-4035 in the amount of \$\_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.  
d. [XX] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment  
to Deposit Account No. 02-4035. A duplicate copy of this sheet is enclosed.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or  
(b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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Date of this submission: **March 28, 2002**

SIGNATURE

Sheridan Neimark

NAME

20,520

REGISTRATION NUMBER

March 11, 2001

1

PCT/DE00/03419

**Method for Controlling a Vending Machine and  
Charging of a Dispensed Item of Merchandise**

The present invention is concerned with a method for controlling a vending machine and charging of a dispensed item of merchandise according to the preamble of the independent claim.

Patent document WO-A-99 22346 reveals a method for controlling a vending machine and charging of a dispensed item of merchandise using a mobile telephony system. A user can order an item of merchandise from the vending machine with his mobile telephone by dialing a vending machine telephone number that is displayed on the vending machine. The item of merchandise is charged with the aid of billing data that are matched to the user's telephone number and billed with his telephone bill.

A method for controlling a vending machine and charging of a dispensed item of merchandise using a mobile telephony system is also known from patent document JP-A-08249530 A. The user can control a vending machine with his mobile telephone in such a way that he is recognized by the system based on his telephone number. Billing data are generated that are transmitted to a billing center, where the incurred costs are charged.

The present invention is based on the following object (problem):

A method shall be presented for a simple control of a vending machine and a simple and cashless charging of the dispensed item of merchandise.

1a

This object is met with the characteristics defined in the independent patent claim.

A vending machine has a mobile radiocommunication transmit/receive unit, e.g., a GSM module, and can be called by the customer from his mobile telephone via an (abbreviated) mobile telephone number affixed on the vending machine. The vending machine prompts the customer to select the merchandise and, after dispensing the item of merchandise, generates a billing entry that must be settled. In the case of prepaid customers a balance verification must be performed prior to dispensing the merchandise.

Advantages compared to the prior art

The known methods for charging for transactions or services via a telecommunications network require that a mini-payment account be kept directly in the IN-SCP. This requires the operator to have a banking license. This is circumvented in the present invention in such a way that an account with an outside banking organization is accessed.

The voice access to the vending machine is an important simplification for the GSM user compared, e.g., to the SMS access. Furthermore, the reservation process permits an online verification of available funds and the electronic billing entry can nevertheless be processed offline. The reservation and billing entry can be uniquely matched to one another based on the telephone numbers.

Figure 1 shows an example of an inventive system architecture.

The vending machine 1, 1' incorporates a GSM module and a GSM telephone number. Merchandise with different prices can be selected from the vending machine. Displayed on the vending machine is an (abridged) telephone number.

The IN-SCP 2 (Intelligent-Network Service Control Point) incorporates a database 3 in which the abridged number of the vending machine is mapped to an unabridged telephone number. This can be done using the location information from the call data of the call placed by the GSM user. The IN-SCP is furthermore also connected to a payment gateway 4.

The payment gateway 4 has online access to a mini-payment account, which is kept at a bank 5. In the payment database 6 a mini-payment account number has been established for each user. The current account information is known in the payment database 6 at all times through regular comparison or online access to the bank 5.

The GSM user is standing in front of a vending machine 1, 1' with his mobile telephone unit 7. He dials the (abbreviated) telephone number displayed on the vending machine. In the MSC 8 it is detected that this is a special number that needs to be analyzed in the IN-SCP 2. From the MSC a communication line is established to the IN-SCP, and the telephone number of the GSM user, the dialed telephone number, and the GSM user's location are transmitted.



telephone number, the reservation that was previously made by the IN-SCP and clears the same. The price for the merchandise is debited to the user's account and credited, by means of a credit entry, to the account of the vending machine operator.

The connection between the reservation and billing entry can also be made with the aid of a reference number. When a reservation is made, the payment gateway issues a reference number and communicates the same to the IN-SCP as part of the positive acknowledgement. The IN-SCP transmits it to the vending machine when establishing the connection, e.g., as a UUS parameter or as a subaddress. The vending machine adds this reference number to the billing entry and the payment gateway can uniquely match the reservation and billing entry. The payment gateway automatically clears a reservation after a predefined maximum time if no billing entry has arrived from the vending machine by then. The reserved funds are then available again for other payments.

**What is claimed is**

1. A method for controlling and operating a vending machine (1) that incorporates a mobile radiocommunication transmit/receive unit and can be called from a user's mobile telephone end unit (7) over a mobile telephone network (8) via an (abbreviated) mobile telephone number affixed on the vending machine, wherein the vending machine (19) prompts the user to select the merchandise and, after the merchandise has been dispensed, generates a billing entry, characterized in that the billing entry is settled via a payment gateway (4) that has access to a mini-payment account the user has opened with a bank (5), the mini-payment account number of which is determined based on the user's mobile telephone number.
2. A method according to claim 1, characterized in that charging of the dispensed merchandise takes place by combining standard IN traffic control with standard (Internet) payment systems.
3. A method according to any of the above claims, characterized in that the actual telephone number of the vending machine (1) is determined in an IN-SCP (2), and a connection to the payment gateway (4) is established, and a request is issued, with a reference to the vending machine (1), to reserve a certain maximum amount on the mini-payment account of the user who has been uniquely identified based on his telephone number.
4. A method according to any of the above claims, characterized in that, when sufficient funds exist on the mini-payment account, the reservation with the reference to the telephone number of the vending machine (1) is made and positively acknowledged in the IN-SCP (2), and reserved funds are not available for other payments until they have been cleared.



5. A method according to any of the above claims, characterized in that if the acknowledgement from the payment gateway (4) is positive, the IN-SCP (2) informs the MSC (8) of the unabridged telephone number of the vending machine (1), that the MSC (8) establishes a voice connection to the vending machine (1), that the vending machine (1) identifies, from the ISDN signal, the telephone number of the user and prompts the user to select an item of merchandise in such a way that the user communicates with the vending machine (1) via his mobile telephone (7), that subsequently the GSM connection between the user and vending machine is initiated by the vending machine, that the user presses a selection button, that the item of merchandise is dispensed, and the vending machine (1) generates an electronic billing entry.

6. A method according to any of the above claims, characterized in that the billing entry includes the vending machine telephone number, the GSM user's telephone number, a merchandise identification and the price.

7. A method according to any of the above claims, characterized in that the billing entry is transmitted by the vending machine (1) to the payment gateway (4) via a GSM short message or GSM-USSD.

8. A method according to any of the above claims, characterized in that the payment gateway (4) receives the electronic billing entry, determines, based on the GSM telephone number of the user, his mini-payment account and, based on the vending machine telephone number, recognizes and clears the reservation previously made by the IN-SCP (2), during which process the cost for the merchandise is debited to the user's account and credited to the account of the vending machine operator via a credit entry.

9. A method according to any of the above claims, characterized in that the vending machine (1) is controlled by a voice connection.

## (12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum  
Internationales Büro(43) Internationales Veröffentlichungsdatum  
5. April 2001 (05.04.2001)

PCT

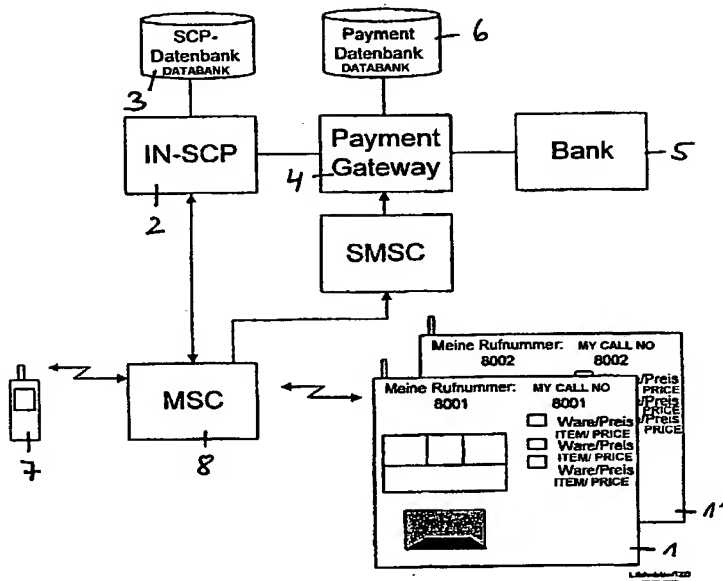
(10) Internationale Veröffentlichungsnummer  
WO 01/24120 A3

- (51) Internationale Patentklassifikation<sup>7</sup>: G07F 7/08, 9/00, 7/10
- (21) Internationales Aktenzeichen: PCT/DE00/03419
- (22) Internationales Anmeldedatum: 28. September 2000 (28.09.2000)
- (25) Einreichungssprache: Deutsch
- (26) Veröffentlichungssprache: Deutsch
- (30) Angaben zur Priorität: 199 46 529.0 28. September 1999 (28.09.1999) DE
- (71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): DETEMOBIL DEUTSCHE TELEKOM MOBIL-NET GMBH [DE/DE]; Landgrabenweg 151, 53227 Bonn (DE).
- (72) Erfinder; und  
(75) Erfinder/Anmelder (nur für US): LANGER, Michael [DE/DE]; Gallierweg 57, 53117 Bonn (DE). LJUNGSTRÖM, Patrik [SE/DE]; Am Fronhof 11, 53639 Königswinter (DE). MICHEL, UWE [DE/DE]; Lohmarstr. 10, 53604 Bad Honnef (DE). REINDL, Johann [DE/DE]; An den Markthallen 1, 53119 Bonn (DE). SCHMICKLER, Leonhard [DE/DE]; An der Vogelweide 25, 53229 Bonn (DE).
- (81) Bestimmungsstaaten (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CZ, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

[Fortsetzung auf der nächsten Seite]

(54) Title: METHOD FOR CONTROLLING A MACHINE DISPENSING GOODS AND CHARGING OF GOODS THUS DISPENSED

(54) Bezeichnung: VERFAHREN ZUR ANSTEUERUNG EINES WARENAUSGABEAUTOMATEN UND ZUR ABRECHNUNG EINER AUSGEGEBENEN WARE



MSC ... Mobile Switching Center  
IN ... Intelligent Network  
SCP ... Service Control Point

(57) Abstract: The invention relates to a method for controlling a machine (1,1') which dispenses goods and the charging of goods thus dispensed. Said machine (1,1') has a GSM module and can be called at an abbreviated mobile telephone number allocated to said machine by a customer using a mobile telephone (7). The customer is requested by the machine (1,1') to select goods and an invoice is issued for settlement once the goods have been dispensed. Verification occurs for customers with pre-paid accounts before the goods are dispensed.

(57) Zusammenfassung: Die Erfindung betrifft ein Verfahren zur Ansteuerung eines Warenausgabeautomaten (1,1') und zur Abrechnung der ausgegebenen Ware. Der Warenausgabeautomat (1,1') verfügt über ein GSM-Modul und soll vom Kunden vom Mobiltelefon (7) aus über eine auf dem Automaten angebrachte Mobilfunk(kurz)rufnummer angerufen werden können. Der Automat (1,1') fordert den Kunden zur Auswahl der Ware auf und erzeugt nach dem Warenauswurf einen Rechnungsbeleg, der abgerechnet werden muss. Bei Prepaid-Kunden muss vor dem Auswurf der Ware eine Guthabenprüfung durchgeführt werden.

WO 01/24120

PCT/DE00/03419

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Translations for Fig. 1:

|                   |   |                     |
|-------------------|---|---------------------|
| SCP Datenbank     | - | SCP Database        |
| Payment Datenbank | - | Payment Database    |
| IN-SCP            | - | IN-SCP              |
| Payment Gateway   | - | Payment Gateway     |
| Bank              | - | Bank                |
| SMSC              | - | SMSC                |
| MSC               | - | MSC                 |
| Meine Rufnummer   | - | My telephone number |
| Ware/Preis        | - | Merchandise/Price   |



**Combined Declaration for Patent Application and Power of Attorney**

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD FOR CONTROLLING A MACHINE DISPENSING GOODS AND CHARGING OF GOODS THUS DISPENSED

the specification of which (check one)

- ☐ is attached hereto;  
☐ was filed in the United States under 35 U.S.C. §111 on , as  
 U.S. Appln. No. \_\_\_\_\_\*; or  
☒ was filed in the U.S. under 35 U.S.C. §371 by entry into the U.S. national stage of an international (PCT) application, PCT/DE00/03419, filed September 28, 2000, entry requested on March 28, 2002\*; national stage application received U.S. Appln. No. \_\_\_\_\_\*; §371/§102(e) date \_\_\_\_\_\* (\* if known)

and was amended on (if applicable).

*(include dates of amendments under PCT Art. 19 and 34 if PCT)*

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and I acknowledge the duty to disclose to the Patent and Trademark Office (PTO) all information known by me to be material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §§ 119 (a)-(d) and 365 (b) of any prior foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or under §365(a) of any PCT application which designated at least one country other than the U.S., listed below:

| Application No. | Country | Filing Date (MM/DD/YYYY) |
|-----------------|---------|--------------------------|
| 199 46 529.0    | Germany | 09/28/2000               |

If I claimed foreign priority above, I hereby identify below any foreign application for patent (including an international (PCT) application designating a country other than the United States) or for an inventor's or plant breeder's certificate, having a filing date before that of the earliest application from which foreign priority is claimed (if left blank, then there are none):

| Non-Priority Application No. | Country | Filing Date (MM/DD/YYYY) |
|------------------------------|---------|--------------------------|
|                              |         |                          |

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional applications listed below:

| Application No. | Filing Date (MM/DD/YYYY) |
|-----------------|--------------------------|
|                 |                          |

I hereby claim the benefit under 35 U.S.C. §120 of any prior U.S. non-provisional application(s) or under §365(c) of any prior PCT international application(s) designating the U.S., listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in such U.S. or PCT international application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the PTO all information which is material to patentability as defined in 37 C.F.R. §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

| Application No. | Filing Date (MM/DD/YYYY) | Status (patented, pending, abandoned) |
|-----------------|--------------------------|---------------------------------------|
|                 |                          |                                       |

As a named inventor, I hereby appoint the following registered practitioners to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

**All of the practitioners associated with Customer Number 001444**

Direct all correspondence to the address associated with Customer Number 001444, which is presently:

**BROWDY AND NEIMARK, P.L.L.C.**  
 624 Ninth Street, N.W.  
 Washington, D.C. 20001-5303  
 (202) 628-5197

10089253 . 082602 *Joseph*

Page 2 of 2 Pages

Atty. Docket: LANGER=1

Title: METHOD FOR CONTROLLING A MACHINE DISPENSING GOODS AND CHARGING OF GOODS THUS  
DISPENSED

U.S. Application filed March 28, 2002, Serial No. \_\_\_\_\_  
PCT Application filed September 28, 2000, Serial No. PCT/DE00/03419

The undersigned hereby authorizes the U.S. Attorneys or Agents appointed herein to accept and follow instructions from \_\_\_\_\_ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. Attorneys or Agents and the undersigned. In the event of a change of the persons from whom instructions may be taken, the U.S. Attorneys or Agents appointed herein will be so notified by the undersigned.

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

|   |  |  |                          |
|---|--|--|--------------------------|
| FULL NAME OF FIRST INVENTOR<br><b>Dr. Michael LANGER</b>                    |  | INVENTOR'S SIGNATURE<br><i>Michael Langer</i>      | DATE<br><b>26/06/02</b>  |
| RESIDENCE<br><b>London, United Kingdom GBX</b><br><del>Bonn, Germany</del>  |  | CITIZENSHIP<br><b>Germany</b>                      |                          |
| POST OFFICE ADDRESS<br><b>4 Epirus Road, London SW6 7UH, United Kingdom</b> |  |  |                          |
| FULL NAME OF SECOND JOINT INVENTOR<br><b>Patrik LJUNGSTRÖM</b>              |  | INVENTOR'S SIGNATURE<br><i>Patrik Ljungström</i>   | DATE<br><b>25.4.02</b>   |
| RESIDENCE<br><b>Königswinter, Germany DEX</b>                               |  | CITIZENSHIP<br><b>Swedish</b>                      |                          |
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| FULL NAME OF THIRD JOINT INVENTOR<br><b>Uwe MICHEL</b>                      |  | INVENTOR'S SIGNATURE<br><i>U. Michel</i>           | DATE<br><b>27 May 02</b> |
| RESIDENCE<br><b>Bad Honnef, Germany DEX</b>                                 |  | CITIZENSHIP<br><b>German</b>                       |                          |
| POST OFFICE ADDRESS<br><b>Lohmarstrasse 10, D-53604 Bad Honnef, Germany</b> |  |  |                          |
| FULL NAME OF FOURTH JOINT INVENTOR<br><b>Johann REINDL</b>                  |  | INVENTOR'S SIGNATURE<br><i>J. Reindl</i>           | DATE<br><b>10.6.02</b>   |
| RESIDENCE<br><b>Bonn, Germany DEX</b>                                       |  | CITIZENSHIP<br><b>German</b>                       |                          |
| POST OFFICE ADDRESS<br><b>An den Markthallen 1, D-53119 Bonn, Germany</b>   |  |  |                          |
| FULL NAME OF FIFTH JOINT INVENTOR<br><b>Dr. Leonhard Schmickler</b>         |  | INVENTOR'S SIGNATURE<br><i>Leonhard Schmickler</i> | DATE<br><b>27.5.2002</b> |
| RESIDENCE<br><b>Bonn, Germany DEX</b>                                       |  | CITIZENSHIP<br><b>German</b>                       |                          |
| POST OFFICE ADDRESS<br><b>An der Vogelweide 25, D-53229 Bonn, Germany</b>   |  |  |                          |
| FULL NAME OF SIXTH JOINT INVENTOR   |  | INVENTOR'S SIGNATURE                               | DATE                     |
| RESIDENCE   |  | CITIZENSHIP  |                          |
| POST OFFICE ADDRESS   |  |  |                          |

ALL INVENTORS MUST REVIEW APPLICATION AND DECLARATION BEFORE SIGNING. ALL ALTERATIONS MUST BE INITIALED AND DATED BY ALL INVENTORS PRIOR TO EXECUTION.  
NO ALTERATIONS CAN BE MADE AFTER THE DECLARATION IS SIGNED. ALL PAGES OF DECLARATION MUST BE SEEN BY ALL INVENTORS.